EECE.3170: Microprocessor Systems Design I
Summer 2016

Lecture 4: Key Questions
May 23, 2016

1. Explain the general operation of the AND, OR, XOR, and NOT instructions.

2. **Example:** Show the state of AL after each instruction in the following sequence:

    MOV AL, 55H
    AND AL, 1FH
    OR AL, C0H
    XOR AL, 0FH
    NOT AL

3. Explain the operation of shift instructions. What is the difference between SHR and SAR?

4. **Example:** Given AL = 15H, CL = 03H, and CF = 0, show the state of AL and CF after each instruction in the sequence below:

    SHL AL, 1
    SHR AL, CL
    SAL AL, 5
    SAR AL, 2

5. Explain the operation of the rotate instructions (ROL, ROR, RCL, RCR).

6. **Example:** Given AL = 43h, CL = 04h, and CF = 0, show the state of AL after each
    instruction in the sequence below:

    ROR AL, 2
    ROL AL, CL
    RCR AL, 3
    RCL AL, 4